40. The pulse oximeter of Claim 39, wherein said processor comprises a tracking module which tracks said portion by filtering said at least two intensity signals based upon said estimate.

41. The pulse oximeter of Claim 40, wherein processor has a ratio module configured to derive said oxygen saturation value based on a ratio between said at least two measured intensity signals after filtering in said tracking module.

42. A physiological monitoring method comprising the steps of:

receiving at least two measured intensity signals generated by the detection of at least two wavelengths of light transmitted through body tissue;

filtering at least one of said intensity signals with a Kalman filter to generate an output that is an estimate of a physiological signal;

tracking a portion of each of said intensity signals through motion based upon said output; and

deriving an oxygen saturation value from said portions.

43. The method of Claim 42, wherein said step of tracking comprises filtering said at least two intensity signals based upon said output.

44. The method of Claim 43, wherein said step of deriving an oxygen saturation value comprises at least the step of determining a ratio between said at least two measured intensity signals.

45. A pulse oximeter configured to determine oxygen saturation of a living patient, said oximeter configured to connect to a pulse oximeter sensor having a source of light and a detector for said light, said source of light providing at least two wavelengths, said pulse oximeter comprising:

an input configured to connect to said pulse oximeter sensor and receive at least two measured intensity signals based on said at least two wavelengths after transmission through the tissue of said living patient, each of said at least two measured intensity signals having a portion substantially dependent upon arterial blood oxygen saturation;

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a Kalman filter which receives at an input at least one of said measured intensity signals, said Kalman filter having an output which provides an estimate of a physiological parameter signal related to at least one of said measured intensity signals; and

a processor responsive to said estimate at an input and at least one of said measured intensity signals at the input to derive an oxygen saturation value representative of the oxygen saturation of blood in said tissue.

46. The pulse oximeter of Claim 45, wherein said processor comprises a tracking module which follows said portions by filtering said at least two intensity signals based upon said estimate.

47. The pulse oximeter of Claim 46, wherein processor has a ratio module configured to derive said oxygen saturation value based on a ratio between said at least two measured intensity signals after filtering in said tracking module.

48. A signal processing apparatus for use with a pulse oximeter configured to determine oxygen saturation of a living patient, said oximeter configured to connect to a pulse oximeter sensor having a source of light and a detector for said light, said source of light providing at least two wavelengths, said pulse oximeter comprising:

an input configured to receive at least two measured intensity signals from said pulse oximeter sensor based on said at least two wavelengths after transmission through the tissue of said living patient, each of said at least two measured intensity signals having a portion substantially dependent upon arterial blood oxygen saturation;

a Kalman filter which receives at an input at least one of said measured intensity signals, said Kalman filter having an output which provides an estimate of a physiological parameter signal related to at least one of said measured intensity signals; and

a processor responsive to said estimate at an input and at least one of said measured intensity signals at the input to derive an oxygen saturation value representative of the oxygen saturation of blood in said tissue.